1. An imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal; and

a charge pump coupled to a supply voltage and connected to supply said control signal to said charge transfer device.

2. The imaging device according to claim 1, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

3. The imaging device according to claim 1, wherein said photosensitive area is a photodiode.

4. The imaging device according to claim 1, wherein said charge transfer device comprises a field effect transistor and said charge pump is connected to the gate of said field effect transistor.

5. The imaging device according to claim 1, wherein said node is a floating diffusion node.

6. The imaging device according to claim 1, wherein the output of said charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

7. The imaging device according to claim 1, wherein the output of said charge pump is at a voltage of at least VDD+Vth, where VDD is a supply voltage and Vth is a gate threshold voltage of said charge transfer device.

8. An imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and

having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal;

a reset transistor responsive to a reset control signal for resetting said node to a predetermined charge condition prior to the transfer of charge thereto from said photosensitive area; and

a charge pump coupled to a supply voltage and connected to supply said reset control signal to said reset transistor.

9. The imaging device according to claim 8, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

10. The imaging device according to claim 8, wherein said photosensitive area is a photodiode.

11. The imaging device according to claim 8, further comprising a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal.

12. The imaging device according to claim 11, further comprising a charge pump coupled to a supply voltage and connected to supply said control signal to said control transfer device.

13. The imaging device according to claim 11, wherein said charge transfer region is controlled by a field effect transistor.

14. The imaging device according to claim 11, wherein said node is a floating diffusion node.

15. The imaging device according to claim 8, wherein the output of said charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

16. The imaging device according to claim 8, wherein said reset device comprises a field effect transistor and said reset control signal is applied to a gate of said field effect transistor and the output of said charge pump is at a voltage of at least VDD+Vth, where VDD is a supply voltage and Vth is a gate threshold voltage of said field effect transistor.

17. An imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a charge transfer region being formed in said substrate adjacent said photosensitive area;

a row select transistor for reading out a signal from said output transistor in response to a row select signal; and

a charge pump coupled to a supply voltage and connected to supply said row select signal to a gate of said row select transistor.

18. The imaging device according to claim 17, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

19. The imaging device according to claim 17, wherein said photosensitive area is a photodiode.

20. The imaging device according to claim 17, further comprising a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal

21. The imaging device according to claim 20, further comprising a charge pump coupled to a supply voltage and connected to supply said control signal to said control transfer device.

22. The imaging device according to claim 20, wherein said charge transfer region is controlled by a field effect transistor.

23. The imaging device according to claim 20, wherein said node is a floating diffusion node.

24. The imaging device according to claim 17, wherein the output of said charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

25. The imaging device according to claim 17, wherein the output of said charge pump is at a voltage of at least VDD+Vth, where VDD is a supply voltage and Vth is a gate threshold voltage of said row select transistor.

26. An imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal;

a reset transistor responsive to a reset control signal for resetting said node to a predetermined charge condition prior to the transfer of charge thereto from said photosensitive area;

a row select transistor for reading out a signal from said output transistor in response to a row select signal;

a first charge pump coupled to a supply voltage and connected to supply said control signal to said charge transfer device;

a second charge pump coupled to a supply voltage and connected to supply said reset select signal to said reset transistor; and

a third charge pump coupled to a supply voltage and connected to supply said row select signal to said row select transistor.

27. The imaging device according to claim 26, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

28. The imaging device according to claim 27, further comprising a fourth charge pump coupled to a supply voltage and connected to supply a control signal to said photogate.

29. The imaging device according to claim 26, wherein said photosensitive area is a photodiode.

30. The imaging device according to claim 26, wherein said charge transfer region is controlled by a field effect transistor.

31. The imaging device according to claim 26, wherein said node is a floating diffusion node.

32. The imaging device according to claim 26, wherein the output of said charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

33. The imaging device according to claim 26, wherein the output of said charge pumps are at a voltage of at least VDD+Vth, where VDD is a supply voltage and Vth is a gate threshold voltage of said respective transistors.

34. An imaging device comprising:

a photosensitive device formed in a substrate for accumulating photo-generated charge in said substrate;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal;

a reset transistor responsive to a reset control signal for resetting said node to a predetermined charge condition prior to the transfer of charge thereto from said photosensitive area;

a row select transistor for reading out a signal from said output transistor in response to a row select signal; and

a charge pump connected to a supply voltage and supplying a voltage to at least said charge transfer device in response to a charge transfer control signal.

35. The imaging device according to claim 34, wherein said photosensitive device is a photogate.

36. The imaging device according to claim 34, wherein said photosensitive device is a photodiode.

37. The imaging device according to claim 34, wherein said charge transfer device comprises a field effect transistor and said charge pump is connected to the gate of said field effect transistor.

38. The imager device according to claim 34, further comprising a charge pump coupled to a supply voltage and connected to control said row select transistor in response to a row select control signal.

39. The imager device according to claim 34, further comprising a charge pump coupled to a supply voltage and connected to control said reset transistor in response to a reset control signal.

40. The imager device according to claim 34, further comprising a charge pump coupled to a supply voltage and connected to control said reset transistor in response to a reset control signal; and

a charge pump coupled to a supply voltage and connected to control said row select transistor in response to a row select signal.

41. An imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a photogate formed over said photosensitive area;

a readout circuit in said substrate for supplying an output signal representing charge accumulated in said photosensitive area; and

a first charge pump coupled to a supply voltage and connected to supply a first photogate control signal to said photogate.

42. The imaging device according to claim 41, further comprising:

a charge transfer region formed in said substrate adjacent said photosensitive area for receiving charge transferred from said photosensitive area; and

a reset transistor responsive to a reset control signal for resetting said charge transfer region to a predetermined charge condition prior to the transfer of charge thereto from said photosensitive area.

43. The imaging device according to claim 41 wherein said readout circuit comprises an output transistor, said image device further comprising a node connected to a gate of said output transistor and at least one charge transfer device

for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal.

44. The imaging device according to claim 43, wherein said charge transfer region is controlled by a field effect transistor.

45. The imaging device according to claim 43, wherein said node is a floating diffusion node.

46. The imaging device according to claim 41, wherein the output of said first charge pump is a voltage of VSSp which is lower than a supply voltage VSS.

47. The imaging device according to claim 41, further comprising a second charge pump coupled to a supply voltage and connected to supply a second photogate control signal to said photogate

48. The imaging device according to claim 47, wherein said first photogate control signal instructs the photogate to accumulate charge and said second photogate control signal instructs the photogate to transfer charge.

49. The imaging device according to claim 47, wherein the output of said second charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

50. The imaging device according to claim 47, wherein the output of said second charge pump is at a voltage of at least VDD+Vth, where VDD is a supply voltage and Vth is a gate threshold voltage of said photogate.

51. The imaging device according to claim 50, wherein the output of said first charge pump is a voltage of VSSp which is lower than a supply voltage VSS.

52. A method for generating an output signal corresponding to an image received by a sensor on an array having rows and columns of pixel cells formed in a substrate, each cell being capable of collecting electrical charge based on a detected light intensity and having a diffusion node in said substrate capable of holding an electrical charge, the method comprising the steps of:

resetting the voltage of the respective diffusion nodes of the cells to a predetermined voltage;

detecting a first reset voltage at respective diffusion nodes of the cells;

transferring electrical charges collected at respective photoregions of the cells to respective diffusion nodes using respective transistors which are controlled by a signal supplied from a charge pump;

detecting a second voltage at respective diffusion nodes of said cells; and

generating respective cell output signals from said detected first and second voltage of said cells.

53. The method for generating an output signal according to claim 52, wherein said photoregion is a photogate.

54. The method for generating an output signal according to claim 52, wherein said photoregion is a photodiode.

55. The method for generating an output signal according to claim 52, wherein said reset transistor for resetting the voltage of said diffusion node is connected to a charge pump.

56. The method for generating an output signal according to claim 52, wherein said diffusion node is a floating diffusion node.

57. A method for generating an output signal corresponding to an image received by a sensor array having rows and columns of pixel cells formed in a substrate, each cell being capable of collecting electrical charge based on a detected light intensity and having a diffusion node in said substrate capable of holding an amount of electrical charge, the method comprising the steps of:

resetting the voltage of the respective diffusion nodes of the cells to a predetermined voltage, wherein said voltage is reset by a respective reset transistor which is controlled by a reset signal supplied by a charge pump;

detecting a first reset voltage at respective diffusion nodes of the cells;

transferring electrical charges collected at respective photoregions of the cells to respective diffusion nodes;

detecting a second voltage at respective diffusions node of said cells; and

generating cell output signals from said detected first and second voltages of said cells.

58. The method for generating an output signal according to claim 57, wherein said photoregion is a photogate.

59. The method for generating an output signal according to claim 57, wherein said photoregion is a photodiode.

60. The method for generating an output signal according to claim 57, wherein said diffusion nodes are reset by a reset transistor operated by a charge pump.

61. The method for generating an output signal according to claim 57, wherein said diffusion node is a floating diffusion node.

62. The method for generating an output signal according to claim 58, wherein said photogate is activated by a signal coupled to a charge pump.

63. The method for generating an output signal according to claim 57, wherein said electrical charge is transferred by respective cell charge transfer devices coupled to a charge transfer signal provided by a charge pump.

64. A method for generating an output signal corresponding to an image received by a sensor array having rows and columns of pixel cells formed in a substrate, each cell being capable of collecting electrical charge based on a detected light intensity and having a diffusion node in said substrate capable of holding an amount of electrical charge, the method comprising the steps of:

resetting the voltage of the respective diffusion nodes of the cells to a predetermined voltage, wherein said voltage is reset by respective reset transistors which is operated by a reset signal supplied by a first voltage pump;

detecting a first voltage at respective diffusion nodes of the cells;

transferring electrical charges collected at respective photoregions of the cells to said diffusion nodes using respective transistors which are controlled by a transfer signal supplied by a second charge pump;

detecting a second voltage at the respective diffusion nodes of said cells; and

generating cell output signals from said detected first and second voltages of said cells.

65. The method for generating an output signal according to claim 64, wherein said photoregion is a photogate.

66. The method for generating an output signal according to claim 64, wherein said photoregion is a photodiode.

67. The method for generating an output signal according to claim 64, wherein said transistors for resetting the voltage of respective diffusion nodes and said transistors for transferring charge to said diffusion nodes are connected to a first and a second charge pump respectively, each of which provides a respective supply voltage of at least VDD+Vth, wherein VDD is a supply voltage and Vth is a gate threshold voltage of the respective reset and transfer transistors.

68. The method for generating an output signal according to claim 64, wherein said diffusion node is a floating diffusion node.

69. An imaging system for generating output signals based on a received image, the imaging system comprising:

a plurality of active pixel cells arranged into an array of rows and columns, each active pixel cell being operable to generate a voltage at a diffusion node corresponding to detected light intensity by the cells, each of said cells including a reset device for resetting a voltage at said diffusion node, a transfer device for transferring charge from a photosensitive area to said diffusion node and a row select device for reading out a signal representing charges at said diffusion node;

at least one voltage pump coupled to a supply voltage and connected to at least one of a reset device, a transfer device and a row select device of said cells to effectively operate said devices in response to respective control signals;

a row decoder having a plurality of row lines connected to the array, each row line being connected to the row select devices for cells in a particular row of said array; and

a column decoder having a plurality of column control lines connected to the array for selecting and outputting pixel output signals whereby pixels of the array are selected for output by row address and column address.

70. The imaging system according to claim 69, wherein said active pixel cells each include a photogate at said photosensitive area.

71. The imaging system according to claim 68, wherein the photogates of said cells is connected to a voltage pump which provides a photogate signal to said photogates.

72. The imaging system according to claim 69, wherein said active pixel cells each include a photodiode at said photosensitive area.

73. The imaging system of claim 69, wherein said reset devices are connected to a voltage pump which provides a reset signal to said reset devices.

74. The imaging system of claim 69, wherein said transfer devices are connected to a voltage pump which provides transfer signal to said transfer devices.

75. The imaging system of claim 69, wherein said row select devices are connected to a voltage pump which provides row select signal to said row select devices.

76. The imaging device according to claim 69, wherein the output of said charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

77. The imaging system according to claim 69, wherein said reset device, said transfer device and said row select device are connected to at least one charge pump which provides a charge pump voltage of at least VDD+Vth, wherein VDD is a supply voltage and Vth is a gate threshold voltage.

78. The imaging system according to claim 69, wherein said diffusion node is a floating diffusion node.

79. An imaging system comprising:

(i) a processor; and

(ii) a CMOS imaging device for supplying image signals to said processor, said CMOS imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal; and

a charge pump coupled to a supply voltage and connected to supply said control signal to said charge transfer device.

80. The system according to claim 79, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

81. The system according to claim 79, wherein said photosensitive area is a photodiode.

82. The system according to claim 79, wherein said node is a floating diffusion node.

83. The system according to claim 79, wherein said system is a camera system.

84. The system according to claim 79, wherein said system is a scanner.

85. The system according to claim 79, wherein said system is a machine vision system.

86. The system according to claim 79, wherein said system is a vehicle navigation system.

87. The system according to claim 79, wherein said system is a video telephone system.

88. An imaging system comprising:

(i) a processor; and

(ii) a CMOS imaging device for supplying image signals to said processor, said CMOS imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and

having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal;

a reset transistor responsive to a reset control signal for resetting said node to a predetermined charge condition prior to the transfer of charge thereto from said photosensitive area; and

a charge pump coupled to a supply voltage and connected to supply said reset control signal to said reset device.

89. The system according to claim 88, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

90. The system according to claim 88, wherein said photosensitive area is a photodiode.

91. The system according to claim 88, wherein said node is a floating diffusion node.

92. The system according to claim 88, wherein said system is a camera system.

93. The system according to claim 88, wherein said system is a scanner.

94. The system according to claim 88, wherein said system is a machine vision system.

95. The system according to claim 88, wherein said system is a vehicle navigation system.

96. The system according to claim 88, wherein said system is a video telephone system.

97. An imaging system comprising:

(i) a processor; and

(ii) a CMOS imaging device for supplying image signals to said processor, said CMOS imaging device comprising:

a photosensitive area within a substrate for accumulating photo-generated charge in said area;

a readout circuit comprising at least an output transistor formed in said substrate;

a controllable charge transfer region having a control terminal, said transfer region being formed in said substrate adjacent said photosensitive area and

having a node connected to a gate of said output transistor and at least one charge transfer device for transferring charge from said photosensitive area to said node in accordance with a transfer control signal applied to said control terminal;

a row select transistor for reading out a signal from said output transistor in response to a row select signal; and

a charge pump coupled to a supply voltage and connected to supply said row select signal to said row select transistor.

98. The system according to claim 97, further comprising a second charge pump coupled to a supply voltage and connected to supply said transfer control signal to said change transfer device.

99. The system according to claim 97, further comprising a reset transistor to reset said node, wherein the gate of said reset transistor is coupled to the output of a third charge pump to supply a reset signal to the gate of said reset transistor.

100. The system according to claim 97, wherein the accumulation of charge in said photosensitive area is conducted by a photogate connected to a fourth charge pump which provides a photogate signal to said photogate.

101. The system according to claim 100, further comprising a fifth charge pump coupled to a supply voltage and connected to said photogate to supply an elevated output voltage to increase charge collection in said photogate.

102. The system according to claim 101, wherein the output of said fifth charge pump is at a voltage greater than VDD, where VDD is a supply voltage.

103. The system according to claim 101, wherein the output of said fifth charge pump is at a voltage of at least VDD+Vth, where VDD is a supply voltage and Vth is a gate threshold voltage of said photogate.

104. The system according to claim 97, wherein the accumulation of charge in said photosensitive area is conducted by a photogate.

105. The system according to claim 97, wherein said photosensitive area is a photodiode.

106. The system according to claim 97, wherein said charge transfer device is controlled by a field effect transistor and said charge pump is connected to the gate of said transistor.

107. The system according to claim 97, wherein said node is a floating diffusion node.

108. The system according to claim 97, wherein said system is a camera system.

109. The system according to claim 97, wherein said system is a scanner.

110. The system according to claim 97, wherein said system is a machine vision system.

111. The system according to claim 97, wherein said system is a vehicle navigation system.

112. The system according to claim 97, wherein said system is a video telephone system.